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their position at all hazards on top of the writer's head he has not been at all skeptical as to whether the luxury was unnecessary or not.

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#### NOTES ON A NEW SPECIES OF LOXODES (EHRBG.)?

In the course of work upon the distribution of fresh-water protozoa in the southeastern part of Massachusetts many species were found which could not be named according to the available classifications. This is true of various species of the genus *Loxodes*.

*Loxodes* belongs to the class of Infusoria and to the sub-class Ciliata; that is, the protozoon is provided with cilia or setæ during all of its stages, but is free of flagella. This sub-class is divided into a number of orders, *Loxodes* falling under the order of Holotricha. This order includes the ciliata which possess but one kind of cilia and show the anus and mouth conspicuously. The members of the genus *Loxodes* show a hook-like projection on the anterior end which is bent to the left, and cilia cover nearly the entire body. The body is flattened, slightly elongated and possesses a well defined outer envelope of the cell or ectoplasm which is constant in form. The dorsal surface is free from cilia, smoothed and curved. The ventral surface is flat and well ciliated, with a mouth on the left anterior edge which is at the bottom of a slit-like peristome. Some writers claim this leads into a pharynx, the existence of which I have not been able to see. The animal is a free swimmer and shows nuclei clearly.

The species under consideration has an average length of 60 microns and width of 16 microns. It is found in great numbers among *Oscillaria*, associated with *Nassula*, *Paramecium* and rotifers. There was no evidence of its feeding upon the algæ. Its food consisted principally of small paramecia.

They may be narcotized for study by a .47% solution of cocaine hydrochloride; though after about two minutes the animal slowly assumes an oval shape, then becomes round and all evidence of life ceases. The action of the narcotic was not so pronounced up-

on the paramecia and rotifers, for at the end of ten minutes locomotion was evident in these, although not so rapid as in the clear water.

During swimming these ciliata have a spiral motion which is to the right. Trichocysts were noted in the larger specimens, this being limited to the posterior region. Some of them seemed to possess contractile vacuoles while others did not. The anterior end is hook-like but not a rostrum. In this respect it differs from *Loxodes rostrum* (Mull.); the anterior end is also more blunt, and the dorsal surface was more curved than in *L. rostrum*.

Further study upon this species and the genus is in progress.

Chadwick, N. Y.

ELTON R. DARLING.

#### ENTOMOLOGICAL NOTES

*Variation in Spermatozoa.*—Zeleny and Senay ('15, Journ. Exp. Zool., 19:505-514) report results of studies on variation in head length of spermatozoa in insects. This work is a continuation of earlier studies by Zeleny and Faust, an abstract of which appears in this journal (34:191). The following insects were studied: *Corizus lateralis*, *Leptocoris trivittatus*, *Reduviolus ferus*, *Euschistus variolarius*, *Cosmopepla carnifex*, *Passalus cornutus*, and *Berosus striatus*. With the exception of *Passalus cornutus*, all gave distinctly bimodal curves indicating the existence of two distinct size groups of spermatozoa. The one exception yielded a unimodal curve and is interpreted as indicating lack of distinction among the spermatozoa or else as having two groups which differ so slightly from each other that a unimodal result is produced. Additional support is thus given to the belief that dimorphism in size of spermatozoa is common among animals having two chromosomal classes of spermatids, due to quantitative differences in chromosomal content.

*Bibliographies.*—The Journal of Animal Behavior (5:407-461) has issued its annual lists of literature pertaining to the behavior of animals. Turner (pp. 415-445) has given a brief analysis of the more important results which have appeared in the literature of 1914 and lists one hundred seven papers from American and foreign sources which treat of the behavior of spiders and insects other